

## RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical  
Information Center (STIC) no errors detected.

Application Serial Number: 09/986,625  
Source: FW16  
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## RAW SEQUENCE LISTING

DATE: 11/19/2004

PATENT APPLICATION: US/09/986,625

TIME: 11:56:34

Input Set : N:\AMC\US09124238.raw

Output Set: N:\CRF4\11192004\I986625.raw

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1 <110> APPLICANT: Hair, Gregory A.
2   Boden, Scott D.
3 <120> TITLE OF INVENTION: Novel Bone Mineralization Proteins, DNA, Vectors,
4   Expression Systems
5 <130> FILE REFERENCE: 06148.0115
6 <140> CURRENT APPLICATION NUMBER: 09/986,625
7 <141> CURRENT FILING DATE: 2001-11-09
8 <150> PRIOR APPLICATION NUMBER: US/09/124,238
9 <151> PRIOR FILING DATE: 1998-07-29
10 <150> PRIOR APPLICATION NUMBER: 60/054,219
11 <151> PRIOR FILING DATE: 1997-07-30
12 <150> PRIOR APPLICATION NUMBER: 60/080,407
13 <151> PRIOR FILING DATE: 1998-04-02
14 <160> NUMBER OF SEQ ID NOS: 35
15 <170> SOFTWARE: PatentIn Ver. 2.0
17 <210> SEQ ID NO: 1
18 <211> LENGTH: 457
19 <212> TYPE: PRT
20 <213> ORGANISM: Rattus norvegicus
21 <400> SEQUENCE: 1
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24   Arg Leu Gln Gly Gly Lys Asp Phe Asn Val Pro Leu Ser Ile Ser Arg
25           20             25             30
26   Leu Thr Pro Gly Gly Lys Ala Ala Gln Ala Gly Val Ala Val Gly Asp
27           35             40             45
28   Trp Val Leu Ser Ile Asp Gly Glu Asn Ala Gly Ser Leu Thr His Ile
29       50             55             60
30   Glu Ala Gln Asn Lys Ile Arg Ala Cys Gly Glu Arg Leu Ser Leu Gly
31       65             70             75             80
32   Leu Ser Arg Ala Gln Pro Ala Gln Ser Lys Pro Gln Lys Ala Leu Thr
33           85             90             95
34   Pro Pro Ala Asp Pro Pro Arg Tyr Thr Phe Ala Pro Ser Ala Ser Leu
35           100            105            110
36   Asn Lys Thr Ala Arg Pro Phe Gly Ala Pro Pro Pro Thr Asp Ser Ala
37       115            120            125
38   Leu Ser Gln Asn Gly Gln Leu Arg Gln Leu Val Pro Asp Ala Ser
39       130            135            140
40   Lys Gln Arg Leu Met Glu Asn Thr Glu Asp Trp Arg Pro Arg Pro Gly
41       145            150            155            160
42   Thr Gly Gln Ser Arg Ser Phe Arg Ile Leu Ala His Leu Thr Gly Thr
43           165            170            175
44   Glu Phe Met Gln Asp Pro Asp Glu Glu Phe Met Lys Lys Ser Ser Gln

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45          180          185          190
46 Val Pro Arg Thr Glu Ala Pro Ala Pro Ala Ser Thr Ile Pro Gln Glu
47          195          200          205
48 Ser Trp Pro Gly Pro Thr Thr Pro Ser Pro Thr Ser Arg Pro Pro Trp
49          210          215          220
50 Ala Val Asp Pro Ala Phe Ala Glu Arg Tyr Ala Pro Asp Lys Thr Ser
51          225          230          235          240
52 Thr Val Leu Thr Arg His Ser Gln Pro Ala Thr Pro Thr Pro Leu Gln
53          245          250          255
54 Asn Arg Thr Ser Ile Val Gln Ala Ala Ala Gly Gly Gly Thr Gly Gly
55          260          265          270
56 Gly Ser Asn Asn Gly Lys Thr Pro Val Cys His Gln Cys His Lys Ile
57          275          280          285
58 Ile Arg Gly Arg Tyr Leu Val Ala Leu Gly His Ala Tyr His Pro Glu
59          290          295          300
60 Glu Phe Val Cys Ser Gln Cys Gly Lys Val Leu Glu Glu Gly Gly Phe
61          305          310          315          320
62 Phe Glu Glu Lys Gly Ala Ile Phe Cys Pro Ser Cys Tyr Asp Val Arg
63          325          330          335
64 Tyr Ala Pro Ser Cys Ala Lys Cys Lys Lys Lys Ile Thr Gly Glu Ile
65          340          345          350
66 Met His Ala Leu Lys Met Thr Trp His Val Pro Cys Phe Thr Cys Ala
67          355          360          365
68 Ala Cys Lys Thr Pro Ile Arg Asn Arg Ala Phe Tyr Met Glu Glu Gly
69          370          375          380
70 Ala Pro Tyr Cys Glu Arg Asp Tyr Glu Lys Met Phe Gly Thr Lys Cys
71          385          390          395          400
72 Arg Gly Cys Asp Phe Lys Ile Asp Ala Gly Asp Arg Phe Leu Glu Ala
73          405          410          415
74 Leu Gly Phe Ser Trp His Asp Thr Cys Phe Val Cys Ala Ile Cys Gln
75          420          425          430
76 Ile Asn Leu Glu Gly Lys Thr Phe Tyr Ser Lys Lys Asp Lys Pro Leu
77          435          440          445
78 Cys Lys Ser His Ala Phe Ser His Val
79          450          455

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81 &lt;210&gt; SEQ ID NO: 2

82 &lt;211&gt; LENGTH: 1696

83 &lt;212&gt; TYPE: DNA

84 &lt;213&gt; ORGANISM: Rattus norvegicus

85 &lt;400&gt; SEQUENCE: 2

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86 gcacgaggat cccagcgcggt ctcttgagg cgcgcaggca gccgcccagc cgggcattca 60
87 ggagcaggta ccatggattc cttcaaggta gtgctggagg gacctgccc ttggggcttc 120
88 cgtctgcaag ggggcaagga cttcaacgtg cccctctcca tctctcggct cactcctgga 180
89 ggcaaggccg cacaggccgg tgtggccgtg ggagactggg tactgagtat cgacgggtgag 240
90 aacgcccga gctcacaca cattgaagcc cagaacaaga tccgtgcctg tggggagcgc 300
91 ctcagcctgg gtcttagcag agcccagcct gctcagagca aaccacagaa ggcctgacc 360
92 cctccgcccg acccccagag gtacactttt gcaccaagcg cctccctcaa caagacggcc 420
93 cggcccttcg gggcaccccc acctactgac agcgccctgt cgcagaatgg acagctgctc 480
94 agacagctgg tccctgatgc cagcaagcag cggctgatgg agaatactga agactggcgc 540

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95      ccgcggccag ggacaggcca gtcccggtcc ttccgcaccc ttgctcacct caccgggcaca 600
96      gaggttcatgc aagaccccgga tgaggaattc atgaagaagt caagccaggt gccagggaca 660
97      gaagccccag ccccgacctc aaccataccc caggaatcct ggccctggccc caccaccccc 720
98      agccccacca gccgcccacc ctggggcgta gatcctgcac ttgctgagcg ctatgcccc 780
99      gacaaaacca gcacagtgtc gacccgacac agccagccag ccacacctac gcctctgcag 840
100     aaccgcacct ccatagttca ggctgcagct ggaggggggca caggaggagg cagcaacaat 900
101     ggcaagacgc ctgtatgcca ccagtccac aagatcatcc gccggcgata cctggtagca 960
102     ctggggccag cgtaccatcc tgaggaattt gtgtgcagcc agtgtgggaa ggtcctggaa 1020
103     gaggggtggt tcttcgagga gaaggagct atcttttgcc cctcctgcta tgatgtgcgc 1080
104     tatgcacca gctgtgcca atgcaagaag aagatcactg gagagatcat gcatgcgctg 1140
105     aagatgacct gcatgttcc ctgcttcacc tgtgcagcct gcaaaacccc tatccgcaac 1200
106     agggctttct acatggagga gggggctccc tactgcgagc gagattacga gaagatgttt 1260
107     ggcacaaagt gtcgcggtg tgacttcaag atcgatgccg gggaccgttt cctggaagcc 1320
108     ctgggtttca gctggcatga tactgtttt gtttgcgcaa tatgtcaaat caacttgga 1380
109     ggaaagacct tctactcaa gaaggacaag cccctgtgca agagccatgc ctttccccc 1440
110     gtatgagcac ctctcacac tactgccacc ctactctgcc agaagggtga taaaatgaga 1500
111     gagctctctc tccctcgacc tttctgggtg gggctggcag ccattgtcct agccttggct 1560
112     cctggccaga tcctggggct ccctctcac agtccccctt cccacacttc ctccaccacc 1620
113     accaccgtca ctacaggtg ctagectcct agccccagtt cactctggtg tcacaataaa 1680
114     cctgtatgta gctgtg                                     1696

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116 &lt;210&gt; SEQ ID NO: 3

117 &lt;211&gt; LENGTH: 260

118 &lt;212&gt; TYPE: DNA

119 &lt;213&gt; ORGANISM: Rattus norvegicus

120 &lt;400&gt; SEQUENCE: 3

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121     ttctacatgg aggagggggc tcctactgc gagcgagatt acgagaagat gtttggcaca 60
122     aagtgtcgcg gctgtgactt caagatcgat gccggggacc gtttcttga agcctgggt 120
123     ttcagctggc atgatactg tttgtttgc gcaatatgtc aaatcaactt ggaaggaaag 180
124     accttctact ccaagaagga caagcccctg tgcaagagcc atgccttttc ccacgtatga 240
125     gcacctctc acactactgc                                     260

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127 &lt;210&gt; SEQ ID NO: 4

128 &lt;211&gt; LENGTH: 16

129 &lt;212&gt; TYPE: DNA

130 &lt;213&gt; ORGANISM: Artificial Sequence

131 &lt;220&gt; FEATURE:

132 &lt;223&gt; OTHER INFORMATION: Differential Display PCR Primer

133 &lt;400&gt; SEQUENCE: 4

```

134     aagctttttt tttttg                                     16

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136 &lt;210&gt; SEQ ID NO: 5

137 &lt;211&gt; LENGTH: 13

138 &lt;212&gt; TYPE: DNA

139 &lt;213&gt; ORGANISM: Artificial Sequence

140 &lt;220&gt; FEATURE:

141 &lt;223&gt; OTHER INFORMATION: Differential Display PCR Primer

142 &lt;400&gt; SEQUENCE: 5

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143     aagcttggct atg                                     13

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145 &lt;210&gt; SEQ ID NO: 6

146 &lt;211&gt; LENGTH: 223

147 &lt;212&gt; TYPE: DNA

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148 <213> ORGANISM: Rattus norvegicus
149 <400> SEQUENCE: 6
150      atccttgctc acctcacggg caccgagttc atgcaagacc cggatgagga gcacctgaag 60
151      aaatcaagcc aggtgcccag gacagaagcc ccagccccag cctcatctac accccaggag 120
152      cectggcctg gccctaccgc cccagccct accagccgc cgccctgggc tgtggaccct 180
153      gcgtttgccg agcgctatgc cccagacaaa accagcacag tgc 223
155 <210> SEQ ID NO: 7
156 <211> LENGTH: 717
157 <212> TYPE: DNA
158 <213> ORGANISM: Homo sapiens
159 <400> SEQUENCE: 7
160      atggattcct tcaaggtagt gctggagggg ccagcacctt ggggcttccg gctgcaaggg 60
161      ggcaaggact tcaatgtgcc cctctccatt tcccggetca ctcttggggg caaagcggcg 120
162      caggeccggag tggcctgggg tgactgggtg ctgagcatcg atggcgagaa tgccggtagc 180
163      ctcacacaca tcgaagctca gaacaagatc cgggcctgcg gggagcgcct cagcctgggc 240
164      ctacgcaggg cccagccggt tcagagcaaa ccgcagaagg cctccgcccc cgccgcggac 300
165      cctccgcggt acacctttgc acccagcgtc tccctcaaca agacggcccc gccctttggg 360
166      gcgccccgcg ccgctgacag cgccccgcaa cagaatggac agccgctccg accgctggtc 420
167      ccagatgccg gcaagcagcg gctgatggag aacacagagg actggcggcc gcggccgggg 480
168      acaggccagt cgcgttcctt ccgcatacct gcccacctca caggcaccca gtteatgcaa 540
169      gaccgggatg aggagcacct gaagaaatca agccaggtgc ccaggacaga agccccagcc 600
170      ccagcctcat ctacacccca ggagccctgg cctggcccta ccgccccag cctaccagc 660
171      cgccccctt gggtgtgga cctgcggtt gccgagcgt atgccccgga caaaacg 717
173 <210> SEQ ID NO: 8
174 <211> LENGTH: 1488
175 <212> TYPE: DNA
176 <213> ORGANISM: Homo sapiens
177 <400> SEQUENCE: 8
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179      tgccggggagc gcctcagcct gggcctcagc agggcccagc cggttcagag caaaccgcag 120
180      aaggcctccg ccccgccgcg ggaccctccg cggtagacct ttgcaccag cgtctccctc 180
181      aacaagacgg cccggccctt tggggcgccc ccgcccgtg acagcgcgcc gcaacagaat 240
182      ggacagccgc tccgaccgct ggtcccagat gccagcaagc agcggctgat ggagaacaca 300
183      gaggactggc ggccgcggcc ggggacaggc cagtgcggtt ccttccgcat ccttgcccac 360
184      ctcacaggca ccgagttcat gcaagaccgc gatgaggagc acctgaagaa atcaagccag 420
185      gtgcccagga cagaagcccc agccccagcc tcactacac ccaggagcc ctggcctggc 480
186      cctaccgccc ccagccctac cagccgcccg cctgagctg tggaccctgc gtttgccgag 540
187      cgctatgcc cgacaaaaac gagcacagt ctgaccggc acagccagcc ggccacgccc 600
188      acgcccgtgc agagccgcac ctccattgtg caggcagctg ccggaggggt gccaggagg 660
189      ggcagcaaca acggcaagac tcccggtgtg caccagtgc acaaggctcat ccggggccgc 720
190      tacctggtgg cgttgggcca cgcgtaccac ccggaggagt ttgtgtgtag ccagtgtggg 780
191      aaggctcttg aagaggggtg cttctttgag gagaaggcg ccatcttctg cccaccatgc 840
192      tatgacgtgc gctatgcacc cagctgtgcc aagtgaaga agaagattac aggcagatc 900
193      atgcacgccc tgaagatgac ctggcacgtg cactgcttta cctgtgctgc ctgcaagacg 960
194      cccatccgga acagggcctt ctacatggag gaggcgctgc cctattgcga gcgagactat 1020
195      gagaagatgt ttggcacgaa atgccatggc tgtgacttca agatcgacgc tggggaccgc 1080
196      ttcttgagg cctgggctt cagctggcat gacacctgct tcgtctgtgc gatatgtcag 1140
197      atcaacctgg aaggaaagac cttctactcc aagaaggaca ggccctctctg caagagccat 1200
198      gccttctctc atgtgtgagc ccttctgcc cacagctgcc gcggtggccc ctagecctgag 1260

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199      gggcctggag tcgtggccct gcatttctgg gtagggctgg caatggttgc cttaaccttg 1320
200      gctcctggcc cgagcctggg ctcccgggcc cctgcccacc caccttatcc tcccacccca 1380
201      ctccctccac caccacagca caccggtgct ggccacacca gcccccttcc acctccagt 1440
202      ccacaataaa cctgtacca gctgaattcc aaaaaatcca aaaaaaaa 1488

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204 &lt;210&gt; SEQ ID NO: 9

205 &lt;211&gt; LENGTH: 1644

206 &lt;212&gt; TYPE: DNA

207 &lt;213&gt; ORGANISM: Homo sapiens

208 &lt;400&gt; SEQUENCE: 9

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209      atggattcct tcaaggtagt gctggagggg ccagcacctt ggggcttccg gctgcaaggg 60
210      ggcaaggact tcaatgtgcc cctctccatt tcccggctca ctctggggg caaagcggcg 120
211      cagggcggag tggcctggg tgactgggtg ctgagcatcg atggcgagaa tgcgggtagc 180
212      ctcacacaca tcgaagctca gaacaagatc cgggcctgcg gggagcgctt cagcctgggc 240
213      ctacgcaggg ccagccgggt tcagagcaaa ccgcagaagg cctccgcccc cgccgcggac 300
214      cctccgcggt acacctttgc acccagcgtc tccctcaaca agacggcccc gccctttggg 360
215      gcgccccgcg ccgctgacag cgccccgcaa cagaatggac agccgctccg accgctggtc 420
216      ccagatgccg gcaagcagcg gctgatggag aacacagagg actggcggcc gcggccgggg 480
217      acaggccagt cgcgttcctt ccgcatacct gccacctca caggcaccga gttcatgcaa 540
218      gacccggatg aggagcacct gaagaaatca agccaggtgc ccaggacaga agccccagcc 600
219      ccagcctcat ctacacccca ggagccctgg cctggcccta ccgccccag ccctaccagc 660
220      cgcccgccct gggctgtgga ccctgcgttt gccgagcgct atgccccgga caaaacgagc 720
221      acagtgtcga ccgggcacag ccagccggcc acgcccacgc cgctgcagag ccgcacctcc 780
222      attgtgcagg cagctgccgg aggggtgcca ggagggggca gcaacaacgg caagactccc 840
223      gtgtgtcacc agtggcaca ggtcatccgg ggccgctacc tgggtggcgtt gggccacgcg 900
224      taccaccggg aggagtttgt gtgtagccag tgtgggaagg tcctggaaga ggggtggcttc 960
225      tttgaggaga agggcgccat cttctgcccc ccatgctatg acgtgcgcta tgcaccagc 1020
226      tgtgccaagt gcaagaagaa gattacaggg gagatcatgc acgcctgaa gatgacctgg 1080
227      cagtgccact gctttacctg tgcctgcgc aagacgcccc tccggaacag ggccttctac 1140
228      atggaggagg gcgtgcctta ttgcgagcga gactatgaga agatgtttgg cacgaaatgc 1200
229      catggctgtg acttcaagat cgacgctggg gaccgcttcc tggaggccct gggcttcagc 1260
230      tggcatgaca cctgcttcgt ctgtgcgata tgctagatca acctggaagg aaagaccttc 1320
231      tactccaaga aggacaggcc tctctgcaag agccatgcct tctctcatgt gtgagccct 1380
232      tctgcccaca gctgccgagg tggcccttag cctgaggggg ctggagtcgt ggccttgcac 1440
233      ttctgggtag ggctggcaat ggttgcccta accctggctc ctggcccag cctgggctcc 1500
234      cgggccccctg cccaccacc ttatctctcc accccactcc ctccaccacc acagcacacc 1560
235      ggtgctggcc acaccagccc cctttcacct ccagtgccac aataaacctg taccagctg 1620
236      aattccaaaa aatccaaaa aaaa 1644

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238 &lt;210&gt; SEQ ID NO: 10

239 &lt;211&gt; LENGTH: 457

240 &lt;212&gt; TYPE: PRT

241 &lt;213&gt; ORGANISM: Homo sapiens

242 &lt;400&gt; SEQUENCE: 10

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243      Met Asp Ser Phe Lys Val Val Leu Glu Gly Pro Ala Pro Trp Gly Phe
244      1              5              10              15
245      Arg Leu Gln Gly Gly Lys Asp Phe Asn Val Pro Leu Ser Ile Ser Arg
246      20              25              30
247      Leu Thr Pro Gly Gly Lys Ala Ala Gln Ala Gly Val Ala Val Gly Asp
248      35              40              45
249      Trp Val Leu Ser Ile Asp Gly Glu Asn Ala Gly Ser Leu Thr His Ile

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